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DIFFERENTIAL ANTI-PINCH CAPACITIVE SENSOR

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BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a proximity sensor. In particular, the invention relates to a non-contact strip sensor for identifying the presence of proximate objects from variations in an electric field.

2. Description of the Related Art

[0002] Proximity sensors are widely used in the automotive industry to automate the control of power accessories. For instance, proximity sensors are often used in power window controllers to detect the presence of obstructions in the window frame when a window panel is being directed to the closed position. Such sensors can also be used to detect the presence of obstructions in other types of automotive closures such as sunroofs, side doors, sliding doors, lift gates, and deck lids.

[0003] A variety of capacitor-based proximity sensors are known in the art. For example, U.S. 6,377,009 discloses a system for preventing the pinching or trapping of a foreign object by a closing panel (such as a window) through the use of a sensing electrode or plate. This electrode is a metal strip or wire which is embedded in a plastic or rubber molding strip placed behind a piece of fascia or other trim part. The metal strip or wire and the chassis of the vehicle collectively form the two plates of a sensing capacitor. A foreign object placed between these two electrodes changes the dielectric constant and thus varies the amount of charge stored by the sensing capacitor over a given period of time. The charge stored by the sensor capacitor is transferred to a reference capacitor in order to detect the presence of a foreign object. Similar

Correct set of specification

(should be used)